

Decide whether each of the following equations is an identity, contradiction, or a conditional equation.

1. $2y - y^2 = y(y - 2)$ CONDITONAL	2. $m^2 - 4 = (m + 2)(m - 2)$ IDENTITY
3. $2x + 5 = 2(x + 5)$ CONTRADICTION	4. $3x + 8 - x = 3(x + 8) - x$ CONTRADICTION
5. $2(x - 1) = x - 1 + x - 1$ IDENTITY	6. $4p + 16 = 5(p + 4) - (p + 4)$ IDENTITY

Decide which of the following pairs of equations are equivalent.

7. $4x - 1 = 10$ $12x - 3 = 30$ EQUIVALENT	8. $5 = 8 - 2x$ $2x = 3$ EQUIVALENT	9. $\frac{y+2}{y+3} = \frac{4}{y+3}$ $y + 2 = 4$ EQUIVALENT	10. $\frac{2x+5}{9} = \frac{4x}{9}$ $5 = 2x$ EQUIVALENT
11. $\frac{x}{x-2} = \frac{2}{x-2}$ $x = 2$ NOT EQUIVALENT	12. $\frac{x+3}{x+1} = \frac{2}{x+1}$ $x = -1$ NOT EQUIVALENT	13. $x = 4$ $x^2 = 16$ NOT EQUIVALENT	14. $z^2 = 9$ $z = 3$ NOT EQUIVALENT

Solve each of the following equations. Do not use a calculator. When solving problems with fractions and decimals eliminate the fractions and decimals in the equation.

15. $.3x - .7 = .3 + 2x$ $x = -\frac{10}{17}$	16. $.04x - 2.01 = 3.18 + 4.72$ $x = \frac{991}{4}$
17. $\frac{3}{4}x - 5 + \frac{2}{3} = \frac{5}{3} - x$ $x = \frac{24}{7}$	18. $-\frac{1}{2} + \frac{1}{4}y + 2 = \frac{3}{4}y$ $y = 3$

19. $3(2a + 1) - 4 = 3a - 7[2(3a - 1) + 6]$ $a = -\frac{3}{5}$	20. $5k + 2[-4(k + 3) - k] = 4 - (2k + 3)$ $k = -\frac{25}{3}$
21. $\frac{8}{3}(6x + 7) - 8x = \frac{1}{2}(4 - x) + 11$ $x = -\frac{2}{3}$	22. $7 - \frac{1}{2}(5y - 3) = 10 - \frac{4}{5}(3 - 4y)$ $y = \frac{3}{19}$
23. $2(5a - 3a^2) + (3a - 1)(2a + 3) = 8a + 12$ $a = \frac{5}{3}$	24. $-.4(.5k - .4) = 1.3 - .6(.3 - .2k)$ $k = -3$

25. $4x - 7 - (x - 1)(x + 1) = -3 - (x - 2)(x - 3)$ $x = 3$	26. $.2(.1 - 5x) = -.8(x - .1)$ $x = -\frac{3}{10}$
27. $\frac{3x-2}{7} = \frac{x+2}{5}$ $x = 3$	28. $\frac{2p+5}{5} = \frac{p+2}{3}$ $p = -5$
29. $\frac{9}{x+7} - \frac{3}{2x+1} = \frac{7}{x+7}$ $x = 19$	30. $\frac{6x+7}{4x-1} = \frac{3x+8}{2x-4}$ $x = -\frac{20}{39}$
31. $\frac{2x}{x+3} = \frac{-6}{x+3} - 2$ \emptyset	32. $\frac{y+3}{y-6} + \frac{y-2}{y+2} = \frac{2y^2+9}{y^2-4y-12}$ $y = 3$
33. $\frac{3x}{7x+14} + \frac{5}{7} = \frac{1}{x+2} - \frac{13}{7x+14}$ \emptyset	34. $\frac{x}{x^2-1} - \frac{x+3}{x^2-x} = \frac{-3}{x^2+x}$ $x = -6$

LITERAL EQUATIONS

Solve for x.

35. $2(x - a) + b = 3x + a$ $x = b - 3a$	36. $5x - (2a + c) = a(x + 1)$ $x = \frac{3a+c}{5-a}, \quad a \neq 5$
37. $ax + b = 3(x - a)$ $x = \frac{-3a-b}{a-3}, \quad a \neq 3$	38. $4a - ax = 3b + bx$ $x = \frac{4a-3b}{a+b}, \quad a \neq -b$
39. $\frac{4x}{2a+1} = ax - 1$ $x = \frac{2a+1}{2a^2+a-4}, \quad 2a^2+a-4 \neq 0$	40. $\frac{a}{3x+2} + b = 2a$ $x = \frac{-3a+2b}{6a-3b}, \quad b \neq 2a$

41. $a^2(2x - 3) = 4x$ $x = \frac{3a^2}{2a^2 - 4}, \quad a \neq \pm\sqrt{2}$	42. $a(x + a) = b(x + b)$ $x = -(b + a)$
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Solve for the indicated variable.

43. $kr - p = br + c$ for r $r = \frac{p+c}{k-b}, \quad k \neq b$	44. $A = \frac{1}{2}(B + b)h$ for h $h = \frac{2A}{B+b}, \quad B \neq -b$
45. $C = \frac{5}{9}(F - 32)$ for F $F = \frac{9}{5}C + 32$	46. $A = P\left(1 + \frac{i}{m}\right)$ for m $m = \frac{pi}{A-P}, \quad A \neq P$
47. $m = \frac{Ft}{v_1 - v_2}$ for v_2 $v_2 = \frac{v_1 m - Ft}{m}, \quad m \neq 0$	48. $\frac{1}{a} = \frac{1}{b} + \frac{1}{c}$; for c $c = \frac{ab}{b-a}, \quad a \neq b$
49. $\frac{x-a}{y-b} = 2$; for y $y = \frac{x-a+2b}{2}$	50. $\frac{2b}{c-1} = b-d$; for c $c = \frac{3b-d}{b-d}, \quad b \neq b$
51. $y = \frac{ax+b}{cx+d}$; for x $x = \frac{b-dy}{yc-a}, \quad yc \neq a$	52. $S = k\left(1 + \frac{r}{n}\right)$; for r $r = \frac{sn-kn}{k}, \quad k \neq 0$

